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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the cover tape heat sealed to the carrier tape which is used for the taping packaging body which stores a chip type electronic component, and which formed the stowage continuously in more detail about the cover tape for a taping package.

[0002]

[Description of the Prior Art] (The technical background) A taping package is carried out and the surface mount to an electronic circuit board etc. is presented with chip type electronic components, such as an IC chip and a capacitor, in recent years. After a taping package stores electronic parts to the carrier tape which carried out embossing shaping of the crevice which stores electronic parts continuously, it is heat sealed with the cover tape. In order to remove the cover tape of a taping packaging body, to take out electronic parts automatically at the time of mounting and to carry out a surface mount to an electronic circuit board, the cover tape must be able to exfoliate easily from a carrier tape. Since a cover tape will separate also from movement of those other than the time of mounting and electronic parts will be omitted if this exfoliation power (it is also called peel strength, heat sealing strength, or peel-off intensity) of exfoliating is too low, the heat-sealing nature which can secure predetermined exfoliation power is required. However, if too conversely strong, when exfoliating a cover tape with a mounting machine, it cannot stabilize and exfoliate, but exfoliation often becomes intermittent, a carrier tape vibrates up and down, and especially, if the difference (it is called a zip up) of the maximum of exfoliation power and the minimum is large, a carrier tape will vibrate violently. By this vibration, the electronic parts of the accommodation recess jumped out, or the accommodation recess of a carrier tape or the cover tape was contacted, and there was a possibility that breakage, degradation, or contamination might arise. For this reason, zip up

nature with few differences of the maximum of exfoliation power and the minimum is required. By the static electricity which generates a cover tape at the time of exfoliation, a short circuit and a possibility of carrying out an electrostatic discharge damage have electronic parts, and conductive grant is required of a cover tape. In order to detect proper electronic parts and non-** to mounting, the transparency which spaces and checks a cover tape in the state of a taping packaging body is required. Thus, the cover tape with which it is satisfied of all the functions of heat-sealing nature, zip up nature, conductivity, and transparency was called for.

[0003](Advanced technology) Sheet forming conventionally to the carrier tape which consists of easy polyvinyl chloride system resin and polystyrene system resin. The cover tape which laminated heat glue lines (it is also called a heat seal layer and an HS layer), such as polyethylene (PE), modified polyethylene, or an ethylene-vinyl acetate copolymer (EVA), to polyester film (substrate) is known. However, when exfoliating a cover tape with a mounting machine, exfoliation power is not stabilized, but a zip up phenomenon occurs, a carrier tape vibrates, and there is a problem that electronic parts jump out of a receiving pocket. Then, the thing which has composition of a substrate / flexible material layer / heat glue line, and uses the interlaminar-peeling power of a flexible material layer and a heat glue line, And the cover tape which makes a heat glue line heat seal good to a carrier tape by the cushioning properties of a flexible material layer, and makes predetermined exfoliation power profitably like is known (for example, the patent documents 1 thru/or the patent documents 25, reference.). However, since electronic parts are very apt to jump out also of few zip ups and the efficiency of a mounting machine falls by the miniaturization of electronic parts, or improvement in the speed of a mounting machine, In order to satisfy all the functions of heat-sealing nature, zip up nature, conductivity, and transparency, there is a problem that it cannot respond, in the above-mentioned patent documents. On the other hand, in order to give conductivity, the method of scouring opaque electric conduction particles, such as metal particles and a metal fiber, is known (for example, refer to patent documents 26.). However, in order to acquire the transparency which is a grade which can perform the visual inspection of the stored electronic parts, there is a problem that skilled dispersion techniques are required and cause the rise of a manufacturing cost. The method of scouring transparent electric conduction particles, such as metallic oxide particles, such as tin oxide and a zinc oxide, is known (for example, the patent documents 27 thru/or the patent documents 30, reference.). However, although the transparency of a glue line is maintained, there is a fault that the zip up characteristic at the time of mounting is bad, and electronic parts jump out.

[0004]

[Patent documents 1] JP,3-78768,U[Patent documents 2] JP,5-32288,A[Patent documents 3] JP,7-130899,A[Patent documents 4] JP,7-172463,A[Patent documents 5] JP,8-192886,A [Patent documents 6] JP,8-258888,A[Patent documents 7] JP,9-156684,A[Patent documents

8] JP,9-201922,A[Patent documents 9] JP,7-251860,A[Patent documents 10] JP,2000-327024,A[Patent documents 11] JP,2001-315847,A[Patent documents 12] JP,2002-12288,A[Patent documents 13] JP,9-111207,A[Patent documents 14] JP,9-216317,A[Patent documents 15] JP,9-267450,A[Patent documents 16] JP,7-96583,A[Patent documents 17] JP,7-96584,A[Patent documents 18] JP,7-96585,A[Patent documents 19] JP,7-96967,A[Patent documents 20] JP,8-295001,A[Patent documents 21] JP,9-109319,A[Patent documents 22] JP,9-314717,A[Patent documents 23] JP,10-95448,A[Patent documents 24] JP,11-115088,A[Patent documents 25] JP,2001-348561,A[Patent documents 26] JP,2000-142786,A[Patent documents 27] JP,5-8339,A[Patent documents 28] JP,8-295001,A[Patent documents 29] JP,9-109313,A[Patent documents 30] JP,9-267450,A[0005]

[Problem(s) to be Solved by the Invention] Then, this invention is made in order to cancel such a problem. The purpose is to provide the cover tape for a taping package which is equipped with the stable heat-sealing nature to a carrier tape, and good zip up nature and with which it is satisfied of all the functions of conductivity and transparency.

[0006]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, a cover tape for a taping package of electronic parts concerning an invention of claim 1, In a cover tape which heat seals a chip type electronic component to a carrier tape which carries out a taping package, a substrate film layer, a flexible material layer, and a heat glue line are laminated one by one, and a flexible material layer with straight-chain-shape low density polyethylene. In a heat glue line, content of a conductive particle of said heat glue line receives the thermoplastics 100 of a heat glue line including thermoplastics and a conductive particle, It is a mass ratio of the conductive particles 150-500, and flexible material layer thickness is 10-50 micrometers, and it is made for thickness of a heat glue line to be 0.05-1.9 micrometers. According to this invention, at the time of a taping package, it can stabilize and heat seal by good heat-sealing nature to a carrier tape, A cover tape for a taping package in which electronic parts do not jump out by good zip up nature when carrying out high-speed mounting of the miniature electronic component, and efficiency of a mounting machine does not fall and which has a function of conductivity and transparency further is provided. A cover tape for a taping package of electronic parts concerning an invention of claim 2, A surface resistance value of a heat glue line in the above-mentioned cover tape is in the range of 10^5 - 10

¹³ omega/**, and 99%, so that electric charge damping time may be 2 or less seconds, Since according to this invention antistatic property is excellent with the conductivity of a heat glue line and this antistatic property is maintained for a long time, A cover tape for a taping package which neither a short circuit nor an electrostatic discharge damage produces easily in electronic parts is provided also by static electricity with which stored electronic parts generate ** and a cover tape at the time of exfoliation to be destroyed with static electricity. ** and a

haze value are larger than 0%, and it is made total light transmittance be not less than 75% smaller than 100%, and for a cover tape for a taping package of electronic parts concerning an invention of claim 3 to be 50% or less in the above-mentioned cover tape. According to this invention, in order to detect proper electronic parts and non-** to mounting, a cover tape for a taping package which is excellent in transparency which can space and check a cover tape in the state of a taping packaging body is provided. A cover tape for a taping package of electronic parts concerning an invention of claim 4, In a peel strength test in the above-mentioned cover tape, a numerical value peel strength indicates 10-130g/1mm width, and zip up nature that subtracted the minimum value from the maximum of peel strength to be carries out that it is below 30g/1mm width more greatly than 0g/1mm width. According to this invention, when carrying out high-speed mounting of the miniature electronic component, electronic parts do not jump out by good zip up nature, but a cover tape for a taping package in which efficiency of a mounting machine cannot fall easily is provided.

[0007]

[Embodiment of the Invention]The embodiment of this invention is explained in detail with reference to drawings. Drawing 1 is the perspective view of a taping packaging body which used the cover tape of this invention.

(Taping package) First in the taping package 5. After storing electronic parts to the carrier tape 3 (it is also called an embossed tape) which carried out embossing shaping of the crevice which stores these electronic parts for chip type electronic components, such as an IC chip and a capacitor, continuously, it is a packed body heat sealed with the cover tape 1. By this packed body, it is circulated by electronic parts, they are kept, and the machinery called a mounting machine is supplied. In a mounting machine, the cover tape 1 is removed, the electronic parts stored by the crevice established in the carrier tape 3 are taken out, and it is mounted to an electronic circuit board etc.

[0008](Carrier tape) As a material of such a carrier tape 3, material with easy sheet forming, such as polyvinyl chloride, polystyrene, polypropylene, polyester, and polycarbonate, is usually applicable. They may be the independence of these resin and/or copolymerization resin which makes these the main ingredients, a mixture (an alloy is included), or a layered product which consists of two or more layers. A moldability is a good thing and these sheets have a preferred unstretched film. Although the thickness of this sheet can apply about 30-1000 micrometers, 50-700 micrometers is preferred for it, and its 80-300 micrometers are usually the optimal. In the thickness beyond this, a moldability is bad, and intensity runs short by less than this. Additive agents, such as a bulking agent, a plasticizer, colorant, a spray for preventing static electricity, and a conducting agent, may be added to this sheet if needed.

[0009]The male-and-female metallic mold forms this sheet with the molding method of plastic non-heating press forming, the vacuum forming, pressure forming and vacuum pressure sky

shaping to heat, or shaping which uses a plug assist together to these. Polyvinyl chloride system resin with a sufficient moldability and polystyrene system resin are preferred. As a carrier tape used for this invention, either [more than] is applicable.

[0010]Next, the cover tape of this invention is explained. Drawing 2 is a sectional view of the cover tape in which one example of this invention is shown.

(Lamination of a cover tape) The flexible material layer 15 and the heat glue line 17 should just be laminated at least, and the cover tape of this invention may provide easily-adhesive treating layers, such as a primer layer and easily-adhesive processing, in it in order to raise an adhesive property to the substrate film layer 11 between each class. For example, in drawing 2, the adhesives layer 13, the flexible material layer 15, and the heat glue line 17 are laminated by this order the base film 11 and if needed. A flexible material layer shall be straight-chain-shape low density polyethylene (it is called LLDPE), and thickness shall be 10-50 micrometers. In order to give antistatic property to the heat glue line 17, including thermoplastics and a conductive particle, the content of a conductive particle shall consider it as the mass ratio of the conductive particles 150-500 to the thermoplastics 100, and thickness shall be 0.05-1.9 micrometers. The material layer for the prevention from electrification may be provided also in the flexible material layer 15 and opposite side of the base film 11, or electric conduction processing may be carried out.

[0011](Point of an invention) The point of this invention is in satisfying two or more set ability of the heat-sealing nature explained by conventional technology, zip up nature, conductivity, and transparency which carries out phase inconsistency. First, in order to raise 1 conductivity, you want to increase substantially the quantity of the conductive particle made to contain to a heat glue line from the former, but transparency has fallen remarkably under the influence of a lot of conductive particles. Then, in order to raise 2 transparency, thickness of the heat glue line was made very thin with 0.05-1.9 micrometers, but heat-sealing nature got worse to the carrier tape, and adhesive strength (it becomes peel strength when exfoliating, heat sealing strength and) has been insufficient. Then, in order to raise 3 heat-sealing nature, while thickening flexible material layer thickness with 10-50 micrometers, 4) By finding out research for the straight-chain-shape low density polyethylene (LLDPE) in which specific pliability is shown in piles wholeheartedly, and using this material of the thickness of a prescribed range as a material of a flexible material layer, Sufficient pliability is secured at the time of heat sealing, heat-sealing nature was raised, and on the occasion of the exfoliation in the time of mounting under ordinary temperature, it was tough and tearing strength came to satisfy good high zip up nature. Although rubber elasticity improves by the free movement of a polymer chain and pliability and mobility become good with the specific pliability of LLDPE under a carrier tape and the temperature to heat seal, Under the ordinary temperature at the time of mounting, it is the character which serves as the false structure of cross linkage by the generation of the

Thailand molecule which combines a polymer crystal comrade, and increases. That is, it is accepted with the combination of the heat glue line which contains a conductive particle so much very thinly, and the flexible material layer which limited material and thickness, what satisfies all of conductivity, heat-sealing nature, transparency, and zip up nature is found out, and it results in this invention.

[0012](Base film) If there are heat resistance etc. which are equal to the mechanical strength, the manufacture, and the taping package which bear the external force under preservation as the base film 11 of a cover tape, according to a use, various materials are applicable. For example, polyethylene terephthalate, polybutylene terephthalate, Polyethylenenaphthalate, a polyethylene terephthalate isophthalate copolymer, Polyester resin, such as a terephthalic acid **SHIKURO hexanedimethanol ethylene glycol copolymer, Polyamide system resin, such as nylon 6 and Nylon 66, polypropylene, Vinyl system resin, such as polyolefin system resin, such as a polymethylpentene, and polyvinyl chloride, Acrylic resin, such as polyacrylate, poly methacrylate, and polymethylmethacrylate, Imide system resin, such as polyimide and polyether imide, polyarylate, There are cellulose type films, such as styrene resin, such as engineering plastics, such as polysulfone, polyether sulphone, and polyphenylene ether, polycarbonate, and ABS plastics, and cellulose triacetate cellulose die acetate, etc. This base film may be copolymerization resin which uses these resin as the main ingredients, a mixture (alloy ** is included), or a layered product which consists of two or more layers. Although an oriented film or an unstretched film may be sufficient as this base film, it is the purpose of raising intensity and its film extended to 1 shaft orientations or 2 shaft orientations is preferred. Although the thickness of this base film can apply about 2.5-300 micrometers, 6-100 micrometers is preferred for it, and its 12-50 micrometers are usually the optimal. In the thickness beyond this, the heat-sealing temperature at the time of a taping package becomes high, and a cost aspect is also disadvantageous and runs short of mechanical strengths by less than this.

[0013]Although this base film 11 is used as the film which consists of at least one layer of these resin, a sheet, and the shape of a board, it names these shape a film generically on these specifications. Usually, since ** of a cost aspect and a mechanical strength is good, the film of polyester systems, such as polyethylene terephthalate and polyethylenenaphthalate, is used suitably, and polyethylene terephthalate is the optimal. In advance of lamination of the flexible material layer 15, this base film 11 to a lamination side Corona discharge treatment, Easily-adhesive processing of plasma treatment, ozonization, a frame process, primer (called anchor coat, adhesion promoter, and quick adhesive agent) coating treatments, a preheat treatment, dust-removing dust processing, deposition treatment, alkali treatment, etc. may be performed. This resin film may add additive agents, such as a bulking agent, a plasticizer, colorant, and a spray for preventing static electricity, if needed.

[0014](Adhesives layer) The adhesives layer 13 may be formed if needed in between the base film 11 and the flexible material layer 15. By pasting up firmly and making the base film 11 and the flexible material layer 15 laminate, the mechanical strength of the base film 11 and the toughness of the flexible material layer 15 can multiply this adhesives layer 13, and it can demonstrate a seictility-proof with the stronger cover tape 1.

[0015](LLDPE) As the flexible material layer 15, straight-chain-shape low density polyethylene (LLDPE) can be applied, and there are what polymerized with the Ziegler type catalyst, and a thing which polymerized according to the metallocene system catalyst in this LLDPE. Since LLDPE is supple, it excels in low-temperature heat-sealing nature, hot tuck nature, shock resistance, shock resistance, and tearing strength and especially the metallocene LLDPE can control molecular weight distribution narrowly, The fall beyond the greasiness nature accompanying low crystallization and the necessity for the melting point and the emitting smoke at the time of shaping are suppressed, and the elastomer performance is also provided. Therefore, the metallocene straight-chain-shape low-density-polyethylene polyethylene (it is called the metallocene LLDPE) which could apply LLDPE which is excellent in pliability, heat-sealing nature, and tearing strength as the flexible material layer 15, and polymerized according to the metallocene system catalyst still more preferably is more preferred.

[0016](LLDPE) LLDPE manufactured with the Ziegler type catalyst is an ethylene alpha olefin copolymer. the comonomer (alpha olefin) which constitutes resin of this LLDPE -- the number of carbon atoms -- it is the alpha olefin of 4-20 preferably three or more. As an example of this alpha olefin, propylene, 1-butene, 1-hexene, Straight-chain-shape monoolefins, such as 1-octene, 1-nonene, 1-decene, 1-undecene, and 1-dodecen, There are branched chain monoolefins, such as a 3-methyl-1-butene, 3-methyl-1-pentene, 4-methyl-1-pentene, a 2-ethyl-1,2-ethyl-1-hexene, and 2,2,4-trimethyl 1-pentene, a monoolefin further replaced by nuclei, such as styrene, etc. These may be used for carrying out a copolymer to ethylene independently, and may be used combining two or more sorts. Mechanical strength properties become good with **** for alpha olefins with six or more carbon atom, and it excels in shock resistance, and tearing strength becomes remarkably high, and it is more suitable.

[0017](Metallocene LLDPE) The straight-chain-shape low density polyethylene (metallocene LLDPE) which polymerized according to the metallocene system catalyst, Since the fall beyond the greasiness nature accompanying low crystallization and the necessity for the melting point and the emitting smoke at the time of shaping are suppressed since molecular weight distribution is narrowly controllable, and the elastomer performance is provided, it is more desirable.

[0018]One with the preferred metallocene LLDPE is because pliability is excellent although it is resin not constructing a bridge, and the reason is considered to be existence of the polymer chain (Thailand molecule) which combines a crystal part comrade. Since not only between the

time of ordinary temperature and shaping but polymer molecules is the three-dimensional network structure as for a cross linked rubber elastic body, although pliability improves, it is the cause of worsening mobility. However, in the case of the metallocene LLDPE, in hot molding temperature, like usual polyethylene, Since the polymer chain can exercise freely, its mobility is good, but near ordinary temperature, the Thailand molecule which combines a polymer crystal comrade simultaneously with crystal growth generates, the false structure of cross linkage is formed, and tensile strength and toughness are good.

[0019]10-50 micrometers can be applied as thickness of the flexible material layer 15, and it is 20-40 micrometers preferably. Cushioning properties are missing by less than this, and cushioning properties are superfluous, quantity of heat with it is required at more than this, and it is useless at a cost aspect. [bad thermal conductivity and] [superfluous at the time of a seal]

[0020](Laminating method) As a laminated layers method of the base film 11 and the flexible material layer 15, a publicly known dry lamination process and the extrusion lamination NESHON method can be applied, and it is an extrusion coating method preferably. The laminated layers method by a dry lamination process can apply a dry lamination process or a non solvent lamination process. Easily-adhesive processing of corona discharge treatment, plasma treatment, ozonization, a frame process, etc. is preferably performed to the adhesives stratification plane of the flexible material layer 15 beforehand. As adhesives of the adhesives layer 13 used with this dry lamination process, the hardenability adhesives hardened by ionizing radiation, such as heat or ultraviolet rays, and an electron beam, are applicable.

[0021]as the thickness of this adhesives layer 13 -- a 0.05-30-micrometer (dryness) grade -- it is 2-20 micrometers preferably. Wrap membrane formation is not obtained for thickness in the whole surface by less than this, sufficient adhesive strength is insufficient, and it is beyond necessity in more than this, and is useless at a cost aspect. The mixing ratio of main-ingredients resin and a hardening agent of about 1-100 mass parts of hardening agents is two to hardening agent 50 mass part to main-ingredients resin 100 mass part to main-ingredients resin 100 mass part preferably. By one or less mass part, hardening of adhesives runs short of hardening agents, the rigidity as the whole cover tape runs short, and a zip up becomes large. When a hardening agent exceeds 100 mass parts, the adhesive strength of a base film and a flexible material layer falls, at the time of transportation by the taping packaging body filled up with the manufacturing process of a cover tape, and electronic parts, it is at the mounting time of parts and a base film may exfoliate.

[0022]an extrusion lamination process -- a person skilled in the art -- an extrusion lamination (an extrusion lamination process.) A coextrusion lamination called the poly sandwiching method (it is called a co-extrusion lamination process), The publicly known lamination process called extrusion coating (it is also called EC and an extrusion coating method), coextrusion

coating (it is also called a co-extrusion coating method and Co-EC), etc. is applicable.

[0023](Material of a heat glue line) It ranks second and the heat glue line 17 is formed in the 15th page of a flexible material layer. When forming the heat glue line 17 in the 15th page of a flexible material layer, it is desirable to carry out easily-adhesive processing to the 15th page of a flexible material layer. The primer layer for raising both adhesive property is provided, or corona discharge treatment, plasma treatment, ozone gas, a frame process, a preheat treatment, etc. can be applied, and easily-adhesive processing has a primer layer or preferred corona discharge treatment. As this primer layer, for example Polyurethane resin, polyester resin, A copolymer with a polyvinyl chloride acetate copolymer, an acrylic resin, ethylene, styrene, butadiene, etc., etc. can be applied, and the shape of rubber or elastomers, such as butadiene series rubber and acrylic rubber, may be added if needed.

[0024]It dissolves or distributes to a solvent suitably, and these resin is used as coating liquid, and this is applied to the 15th page of a flexible material layer with coating methods, such as publicly known roll coating, and it dries, and is considered as a primer layer. A monomer, oligomer, a prepolymer, etc. a reactional initiator and a hardening agent, a cross linking agent, etc. may be applied to resin, combining base resin and a hardening agent in combining suitably ****, and it dries, or it may be made to react by the aging processing after drying, and may form. About 0.05-2 micrometers of thickness of this primer layer are 0.1-1 micrometer preferably. Since it is pasted firmly and almost can moreover be disregarded in thickness to it if the heat glue line 17 is applied to this corona treatment side, the rigidity as the whole cover tape does not go up, and is more preferred.

[0025](Corona treatment) Corona discharge treatment is a disposal method which impresses high tension to a counterelectrode and a discharge electrode, showers the corona discharge flame from this discharge electrode over a processed subject, reforms the surface by oxidation etc. using the corona surface treatment device which causes corona discharge, and raises hydrophilic nature. Corona treatment is performed to the 15th page of the flexible material layer of this invention, and about 0.00036 or more N/cm of surface tension [0.00040 or more N/cm of] of the 15th page of this flexible material layer are 0.00043 or more N/cm still more preferably preferably. Since it is pasted firmly and almost can moreover be disregarded in thickness to it if the heat glue line 17 is applied to the corona treatment side of the 15th page of this flexible material layer, the rigidity as the whole cover tape does not go up, and is more preferred.

[0026](Material of a heat glue line) This heat glue line 17 may add additive agents, such as a dispersing agent, a bulking agent, a plasticizer, colorant, and a spray for preventing static electricity, if needed including thermoplastics and a conductive particle. As thermoplastics, for example Ionomer resin, acid denaturation polyolefin system resin, An ethylene (meta) acrylic acid copolymer, an ethylene (meta) acrylic ester copolymer, Acrylic resin, such as polyester

system resin, polyamide system resin, vinyl system resin, acrylic, an methacrylic system, Acrylic ester system resin, maleic acid resin, butyral system resin, an alkyd resin, polyethylene oxide resin, polyurethane system resin, silicone resin, rubber system resin, etc. are applicable. These thermoplastics can be used combining independent or plurality. The resin which makes the main ingredients acrylic resin, polyester system resin, polyurethane resin, a vinyl chloride vinyl acetate copolymer or an ethylene-vinyl acetate copolymer, or these from the dispersibility of a conductive particle and the adhesive property to a carrier tape is preferred. Since the thermoplastics used for the heat glue line 17 can perform good heat sealing in an operation of the flexible material layer 15 as mentioned above, it can think balance with a carrier tape as important and can select it free.

[0027](Conductive particle) In a conductive particle, zinc sulfide, copper sulfide, a cadmium sulfide, Metallic oxides, such as what gave conductivity to sulfides, such as a nickel sulfide and palladium sulfide, barium sulfate or tin oxide, a zinc oxide, indium oxide, and titanium oxide, conductive carbon particles, a silicon organic compound, or surface metal plating particles can be used. Preferably, metal oxide particles, such as a tin oxide system, a zinc oxide system, an indium oxide system, and a titanium oxide system, conductive carbon particles, an antistatic mold silicon organic compound, or surface metal plating particles are preferred. The indium oxide which doped the tin oxide which doped antimony, and tin in the metallic oxide is preferred. In filler metal with large particle diameter, the transparency of a cover tape is reduced and it is hard to check the electronic parts stored from the outside. A surface-active agent has humidity dependency, there is not sufficient antistatic effect and there is a possibility of destroying electronic parts under low humidity. What is necessary is just to use together a made small quantity which can maintain what has small particle diameter, and transparency, or other transparent conductive particles, although carbon particulates and surface metal plating particles are also opaque. Such a conductive particle has that preferred whose mean particle diameter of a primary particle is 0.01-10 micrometers. As shape of a conductive particle, although a needle, a globular shape, the shape of scaphocerite, corniform, etc. are applicable, the shape of transparency to a needle is preferred.

[0028]The content in the mass basis of the conductive particle contained in the heat glue line 17, Can apply the range of the conductive particles 150-500 to the thermoplastics 100, and preferably, It shall be considered as the range of the conductive particles 150-300 to the thermoplastics 100, and about 0.05-1.9 micrometers of thickness [0.1-1.7 micrometers of] of the heat glue line 17 shall be 0.5-1.5 micrometers still more preferably. Since the thickness of the heat glue line 17 is as thin as 0.05-1.9 micrometers in the content of a conductive particle being less than the above-mentioned range, if conductivity is low, and antistatic property is not acquired and the above-mentioned range is exceeded, transparency will fall and heat-sealing nature with a carrier tape will be checked. It is important to have the

content range and thickness range of this conductive particle. Content is a mass basis as long as there is no notice. Since it is easy to come out of an error thinly, after the thickness of the heat glue line 17 finds the weight of a prescribed area, it is converted and computed from the specific gravity of the heat glue line 17 to thickness.

[0029]It distributes or dissolves in a solvent and formation of the heat glue line 17 applies an additive agent with the coating method of a roll coat, a reverse roll coat, gravure coating, a photogravure reverse coat, etc., and it is made to dry and it makes the heat glue line 17 to accept the above-mentioned thermoplastics, a conductive particle, and necessity, and form.

[0030]Antistatic treatment may be performed to the opposite field of the heat glue line 17 of the base film 11, i.e., an outermost surface, using conductive particles, such as a surface-active agent, a silicon organic compound, conductive carbon black, metal deposition, and a metallic oxide, etc. if needed. The thing same as these antistatic materials as the conducting agent used for the heat glue line 17 can be applied, and what is necessary is just to perform antistatic treatment with a publicly known coating method. Generating of the static electricity by contact with antisticking, such as garbage and dust, or other fields can be prevented on the surface of the base film 11.

[0031]Here, the heat-sealing nature by the synergistic effect of the flexible material layer 15 and the heat glue line 17 which is specifically excellent is explained. By the this heat-sealing type approximately said width part, the heat glue line 17 heat seals heat sealing with a carrier tape using a line form heat-sealing type about 0.1-5 mm wide. On the other hand, since a pressure concentrates on the both ends of the this heat-sealing type cross direction when heat pressing is carried out with a heat sealed type, resin of the flexible material layer 15 located especially in both ends becomes soft with the characteristic of this resin, and resin of the flexible material layer 15 flows easily. This softened flexible material layer 15 and the heat glue line 17 in this the 15th page of flexible material layer will be in a resin rich area ball state in the both ends of the heat sealed type cross direction.

[0032]This resin rich area ball flows along a carrier tape side in the heat-sealing type both ends of the carrier tape 3. Although the pocket which stores electronic parts is fabricated, and the heat-sealing side of this carrier tape changes or has curved, by a resin rich area ball flowing, resin is buried, and by high wettability, it can be stuck well and can be heat sealed. Thus, extremely stable heat sealing is obtained with heat sealing of a heat sealed type width part and the resin rich area ball portion of heat sealed type both ends. Thus, the very thin heat glue line 17 can also heat seal now the flexible material layer 15 of a cover tape to a carrier tape by giving moderate pliability, i.e., cushioning properties, and mobility, and synergistic heat-sealing nature reveals the specifically stable heat-sealing nature.

[0033]Thus, since there is the flexible material layer 15 and heat sealing stable to the carrier tape 3 can be performed, the thermoplastics etc. which are excellent in the characteristics,

such as low-temperature heat-sealing nature, can be selected free as a material of the heat glue line 17. The heat seal part of peel strength of the cover tape 1 and the carrier tape 3 is low stable, and gives storage, transportation, and the intensity that bears a vibration in use and a shock with a mounting machine. And even if mounted with the mounting machine which has accelerated the miniature electronic component, a zip up is a stake for parts jumping out very small. Although it is easy to cut a cover tape in the exfoliation at the time of high-speed mounting, if the flexible material layer 15 is laminated to the cover tape 1, by the toughness of this flexible material layer 15, it will become difficult to cut a cover tape, a stop of a mounting machine will be prevented, and operation efficiency will not be reduced.

[0034]The rigidity of the cover tape of this invention in the membrane formation direction using a loop stiffness tester (Product made from an Oriental energy machine) 15 mm in width. The time of pushing in the sample set as loop 62 mm in length 5 mm was set to $t=0$, the stiffness intensity f was measured the following 3, 5, and 10 and as of 30 minutes, and the maximum stiffness intensity in the meantime was made into the initial impact resistance value. and t ($3 \leq t \leq 30$) -- and -- and regression line $f = -at + b$ was calculated with the least square method from f , and a and b of this invention were computed. It has too strong rigidity that an initial impact resistance value is larger than 50 g, it is large, and in 4g or less, the nonuniformity of heat sealing influences peel strength and is presumed that a zip up becomes large. [of a zip up] that a is large means that change of f is large, and a zip up becomes large, and the small thing of a means that change of f is small -- infinite -- 0 -- ***** -- it is desirable. It is in the tendency for an initial impact resistance value to be also large that b is larger than 50 g, rigidity is too strong and a zip up becomes large. Conversely, at less than 4g, an initial impact resistance value also has b in a small tendency, the nonuniformity of heat sealing carries out direct influence to peel strength, and a zip up becomes large.

[0035]Although rigidity can be enlarged as thickening thickness of not less than 50 micrometers and the flexible material layer 15 for the thickness of the base film 11 with not less than 50 micrometers, the quantity of heat which becomes thick and the heat glue line 17 requires cannot be transmitted, but it is necessary to set up the temperature of a seal bar highly. Therefore, the carrier tape 3 inferior to heat resistance carries out modification and a dimensional change, and it becomes the cause of changing the position of the electronic parts to mount. At 10 micrometers or less, rigidity falls the thickness of 12 micrometers or less and the flexible material layer 15 in the thickness of the base film 11, a zip up becomes large, and it is not desirable. Even if the peel strength of the cover tape 1 is proper, if a zip up is large, electronic parts will jump out of a carrier tape, and mounting stable at high speed cannot be performed. As a result of inquiring wholeheartedly, it has become clear that a zip up is related also to the rigidity of a cover tape, a zip up will become large if the rigidity of a cover tape is small, and a zip up becomes it small that it is large within limits with conversely constant

rigidity.

[0036](Surface resistance value) The surface resistance value in the heat glue line 17 of this cover tape has preferred within the limits of 10^5 - 10^{13} omega. The electric charge damping time which shows the static electricity characteristic is excellent with 2 or less seconds. If the above-mentioned surface resistance value exceeds 10^{13} omega, the diffusion effect of static electricity will fall extremely and will become difficult [it / to protect electronic parts from an electrostatic damage]. When it becomes less than 10^5 omega, there is a danger of being destroyed electrically, by energizing from the exterior to electronic parts via a cover tape. The measuring method of a surface resistance value and electric charge damping time is a method written in the column of the valuation method of the example mentioned later.

[0037](Transparency) The total light transmittance as a cover tape is smaller than 100%, and not less than 10%, it is not less than 50% preferably, and not less than 75% and Hays are large, and still more preferably [50% or less of] more desirable than 0%. If it does in this way, the electronic parts enclosed with the inside of a taping packaging body can check easily with viewing or machinery. Total light transmittance is difficult for the check of internal electronic parts in 10% or less of transparency. Here, total light transmittance is a value smaller than 100%, and, of course, Hays is a larger value than 0, and since two or more layers are provided, it does not become such a value. The measuring method of a haze degree and total light transmittance is a method written in the column of the valuation method of the example mentioned later.

[0038](Peel strength) The flexible layer 15 of this invention does so an operation of the cushion on which both sheets are stuck uniformly, when the cover tape 1 is heat sealed with the carrier tape 3. 10-130g/1mm width grade have the preferred peel strength which exfoliates the cover tape 1 heat sealed from the carrier tape 3. If the peel strength of the carrier tape 3 and the cover tape 1 becomes less than 10g/1mm width, when transporting as a taping packaging body, there is a danger that it will exfoliate and contents will be omitted. When peel strength exceeds 130g/1mm width, and exfoliating a cover tape, there is a possibility that the carrier tape 3 may vibrate and electronic parts may jump out.

[0039](Zip up) If a zip up (difference of the maximum of exfoliation power and the minimum) is large, at the time of exfoliation of a cover tape, there is a possibility that a carrier tape may vibrate and contents may jump out, and it is not desirable again. A zip up is larger than 0g/1mm width, and below 30g/1mm width is below 20g/1mm width preferably. It is because a carrier tape when exfoliating runs smoothly and improvement in the speed of a filling machine can be performed that a zip up approaches zero infinite at a zip up that a lower limit is not what existing. The measuring method of peel strength and zip up nature is a method written in the column of the valuation method of the example mentioned later.

[0040](Exfoliating place) It may be able to be suitably chosen by control of heat-sealing conditions again whether interlaminar peeling is made to start depending on character with the above-mentioned flexible material layer 15 and the heat glue line 17 and a kind or cohesive failure is made to cause within a heat glue line. That is, interlaminar peeling can be carried out between the flexible material layer 15 and the heat glue line 17 by strengthening [the temperature at the time of heat sealing] a pressure for cooking time for a long time highly, and carrying out full weld of a carrier tape and the cover tape. On the contrary, by making low temperature at the time of heat sealing, shortening cooking time, or weakening a pressure, if a carrier tape and a cover tape are stopped to an imperfect fusion state -- a heat glue line -- interfacial peeling (in this specification, the exfoliation which takes place between a heat glue line and a carrier tape is meant, and interlaminar peeling which happens between a flexible layer and a heat glue line is distinguished from a term side.) between carrier tapes Although it being the same as that of the following and a zip up of 30g or less can be attained, as a process of operation, heat-sealing conditions are limited extremely and it is unstable. In this invention, since the resin chosen from the wide range can be used as the glue line 17, it can fully heat seal with a carrier tape, and interlaminar peeling can be certainly carried out between the flexible material layer 15 and the heat glue line 17.

[0041]As mentioned above, interlaminar peeling between the flexible material layer 15 and the heat glue line 17 can be attained by fully performing heating and application of pressure. For example, it is [cooking temperature] a 7 - 30 N/cm² grade about application of pressure for 0.05 to 2.0 seconds in 100-200 ** and cooking time. The peel strength between the layers by 180-degree exfoliation is weaker than the peel strength of a heat glue line and a carrier tape, therefore interlaminar peeling between the flexible layer 15 and the heat glue line 17 can be attained by fully heating.

[0042]Since the cover tape of this invention exfoliates between the flexible material layer 15 and the heat glue line 17, it does not change with heat-sealing conditions a lot. Therefore, heat sealing with a cover tape and a carrier tape can fully be heated, and can be performed. With heating, between the layers of the flexible material layer 15 and the heat glue line 17 is adjusted, and this heat sealing can fully obtain the more stable heat-sealing nature and peel strength. Although a reason is not clear about consistency between layers, reduction of the detailed void of the interface between layers, And/or, probably because resin of the flexible material layer 15 of an interface and the heat glue line 17 is annealed (a functional group is conjectured to be reorganized by the crystal structure or the interface between layers), an interface gets used, It is guessed because the layer indirect arrival power (it becomes peel strength when exfoliating) of the flexible material layer 15 and the heat glue line 17 is extremely stabilized in a prescribed range.

[0043]

[Example] (Example 1) as the base film 11 -- a 16-micrometer-thick Tetro film F type (example of LL-EC) (the Teijin, Ltd. make.) Using a polyethylene terephthalate trade name, to this base film 11. The anchor coat agent which consists of tetraisobutyl titanate 5 mass part and n-hexane 95 mass part, After applying and drying by the roll coating method so that the thickness after desiccation may be set to 0.01 micrometer, Heat and carry out melting of kernel KC650 (the Japan Polychem make, metallocene LLDPE trade name) with an extrusion machine as the flexible material layer 15, for T dice, expand crosswise [required], expand it, and it extrudes to 35-micrometer-thick curtain form, It pinched with the rubber roll and the cooled metallic roll, and three layers of base film 11 / anchor coating agent layer (primer layer 13) / flexible material layer 15 pasted up, and were laminated. Then, with the publicly known corona treatment machine, corona treatment was performed to the 15th page of the flexible material layer, and surface tension was set to cm in 0.00040N /. To this corona treatment side, with the photogravure reverse coating method, it applies and the heat glue line 17 following constituent was dried so that the thickness after desiccation might be set to 1.5 micrometers, and the cover tape of Example 1 was obtained. as heat glue line 17 constituent -- diagram knurl BR-83 (the Mitsubishi Rayon Co., Ltd. make.) Acrylic resin trade name 100 mass part, antimony dope tin oxide (Ishihara Sangyo Kaisha, Ltd. make, conductive particle trade name, 50% particle diameter of 0.32 micrometer) 150 mass part, and partially aromatic solvent (equivalent amount of methyl-ethyl-ketone and toluene are mixed) 750 mass part were mixed, and it distributed or dissolved, and was considered as the constituent.

[0044] (Examples 2-9, comparative examples 1-8) (other examples of LL-EC)

Considering it as a material given in Tables 1-4, the thickness after desiccation, and content as the substrate film layer 11, the flexible material layer 15, and the heat glue line 17, this exception obtained the cover tape like Example 1. As for polyethylene terephthalate and EVA, the antimony dope tin oxide and ITO of an ethylene vinylacetate copolymer and ATO are [PET in front] tin dope indium oxide. In order to make an evaluation result easy to compare, Example 1 was indicated also to the table of Tables 2-4.

[0045]

[Table 1]

組成物	実施例1	実施例2	実施例3	比較例1	比較例2
基材 材料 (厚さ μm)	PET (16)	PET (12)	PET (25)	PET (16)	PET (16)
柔軟 材料 材層 (厚さ μm)	均一LLDPE (35)	均一LLDPE (40)	LLDPE (30)	LDPE (35)	EVA (35)
熱接 着層 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	ポリエステル (100)	アクリル樹脂 (100)	アクリル樹脂 (100)
導電性粒子 (含有量)	ATO (150)	ATO (200)	ZnO ₂ (300)	ATO (150)	ATO (150)
(厚さ μm)	(1.5)	(0.5)	(1.7)	(1.5)	(1.5)
表面抵抗値	○	○	○	○	○
評価 電荷減衰率	○	○	○	○	○
光線透過率	○	○	○	○	○
ヘイズ	○	○	○	○	○
引離強度	○	○	○	×	○
ジップアップ	◎	◎	○	×	×

[0046]

[Table 2]

組成物	実施例1	実施例4	実施例5	比較例3	比較例4
基材 材料 (厚さ μm)	PET (16)	PET (50)	PET (12)	PET (16)	PET (16)
柔軟 材料 材層 (厚さ μm)	均一LLDPE (35)	均一LLDPE (10)	均一LLDPE (50)	均一LLDPE (8)	均一LLDPE (60)
熱接 着層 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	ポリウレタン (100)	アクリル樹脂 (100)	アクリル樹脂 (100)
導電性粒子 (含有量)	ATO (150)	ATO (150)	SnO ₂ (150)	ATO (150)	ATO (150)
(厚さ μm)	(1.5)	(1.7)	(0.5)	(1.5)	(1.5)
表面抵抗値	○	○	○	○	○
評価 電荷減衰率	○	○	○	○	○
光線透過率	○	○	○	○	○
ヘイズ	○	○	○	○	○
引離強度	○	○	○	○	×
ジップアップ	◎	○	○	×	×

[0047]

[Table 3]

組成物		実施例1	実施例2	実施例3	比較例5	比較例6
基材	材料 (厚さ μ m)	PET (16)	PET (16)	PET (25)	PET (16)	PET (16)
柔軟 材料	材料 (厚さ μ m)	メタロLLDPE (36)	メタロLLDPE (30)	メタロLLDPE (20)	メタロLLDPE (35)	メタロLLDPE (35)
熱接 着層	樹脂 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)
	導電性粒子 (含有量)	ATO (150)	ATO (200)	ATO (300)	ATO (150)	ATO (150)
	(厚さ μ m)	(1. 5)	(0. 05)	(1. 8)	(0. 02)	(2. 2)
評価	表面抵抗値	○	○	○	×	○
	電荷消滅率	○	○	○	×	○
	光線透過率	○	○	○	○	×
	ヘイズ	○	○	○	○	×
	耐熱強度	○	○	○	○	○
	ジップアップ	◎	○	○	○	○

[0048]

[Table 4]

組成物		実施例1	実施例2	実施例3	比較例7	比較例8
基材	材料 (厚さ μ m)	PET (16)	PET (16)	PET (25)	PET (16)	PET (16)
柔軟 材料	材料 (厚さ μ m)	メタロLLDPE (36)	メタロLLDPE (30)	メタロLLDPE (20)	メタロLLDPE (30)	メタロLLDPE (30)
熱接 着層	樹脂 (含有量)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	アクリル樹脂 (100)	塩化ビニル樹脂 (100)
	導電性粒子 (含有量)	ATO (150)	ATO (250)	ATO (500)	ATO (100)	ATO (600)
	(厚さ μ m)	(1. 5)	(1. 5)	(1. 5)	(1. 5)	(1. 5)
評価	表面抵抗値	○	○	○	×	○
	電荷消滅率	○	○	○	×	○
	光線透過率	○	○	○	○	×
	ヘイズ	○	○	○	○	×
	耐熱強度	○	○	○	○	○
	ジップアップ	◎	○	○	○	○

[0049](Example 10) (example of a poly sand)

As the flexible material layer 15, it is the T-die forming-membranes method beforehand, using a 16-micrometer-thick Teton film F type (the Teijin, Ltd. make, polyethylene terephthalate film trade name) as the base film 11, The film-ized 20-micrometer-thick thing was used for kernel KC650 (the Japan Polychem make, metallocene LLDPE trade name). The base film 11 and flexible material layer 15 film are laminated by the poly sandwiching method. To the base film 11, the anchor coat agent which consists of tetraisobutyl titanate 5 mass part and n-hexane 95 mass part, After applying and drying by the roll coating method so that the thickness after desiccation may be set to 0.01 micrometer, It extrudes to curtain form so that melting of Myra Son 16 (low density polyethylene, the Mitsui Chemicals, Inc. make, trade name) may be

heated and carried out with an extrusion machine, he may be expanded and expanded crosswise [required] for T dice as extrusion resin and thickness may be set to 15 micrometers, Kernel KC650 20-micrometer-thick film was supplied to this extrusion resin surface as the previous flexible material layer 15, and it pinched with the rubber roll and the cooled metallic roll, and the layer of base film 11 / anchor coat layer / extrusion resin layer / flexible material layer 15 pasted up, and was laminated. Then, with the publicly known corona treatment machine, corona treatment was performed to the 15th page of the flexible material layer, and surface tension was set to cm in 0.00043N /. To this corona treatment side, with the photogravure reverse coating method, it applies and the heat glue line 17 following constituent was dried so that the thickness after desiccation might be set to 1.5 micrometers, and the cover tape was obtained. as heat glue line 17 constituent -- diagram knurl BR-83 (the Mitsubishi Rayon Co., Ltd. make.) Acrylic resin trade name 100 mass part, antimony dope tin oxide (Ishihara Sangyo Kaisha, Ltd. make, conductive particle trade name, 50% particle diameter of 0.32 micrometer) 150 mass part, and partially aromatic solvent (equivalent amount of methyl-ethyl-ketone and toluene are mixed) 750 mass part were mixed, and it distributed or dissolved, and was considered as the constituent.

[0050](Example 11) (example of dry lamination)

as the base film 11 -- a 12-micrometer-thick Teton film F type (the Teijin, Ltd. make.) Regent floor line-LL-XUMN [finishing / 40 micrometer / in thickness / double-sided corona treatment / (surface tension 0.00036 N/cm)] (the Nimura chemicals company make, LLDPE film trade name) film-ized beforehand is used as the flexible material layer 15 using a polyethylene terephthalate film trade name. This base film 11 and the flexible material layer 15 are laminated with a dry lamination process. To the base film 11, they are the bamboo rack A-515 (main-ingredients resin) of a polyurethane system, and Takenate A-12 (hardening agent) (all). After applying and drying by the gravure coating method so that the thickness after desiccation may be set to 1.5 micrometers, the adhesives agent using the Takeda Chemical Industries, Ltd. make and trade names, A 40-micrometer-thick regent floor line-LL-XUMN film is supplied as the previous flexible material layer 15, it pinches with a rubber roll and a metallic roll, and base film 11 / adhesives layer / flexible material layer 15 is laminated, and it aged for two days and was made to harden at the temperature of 50 **. To the 15th page of this flexible material layer, with the photogravure reverse coating method, it applies and the heat glue line 17 following constituent was dried so that the thickness after desiccation might be set to 0.5 micrometer, and the cover tape was obtained. as heat glue line 17 constituent -- diagram knurl BR-83 (the Mitsubishi Rayon Co., Ltd. make.) Acrylic resin trade name 100 mass part, antimony dope tin oxide (Ishihara Sangyo Kaisha, Ltd. make, conductive particle trade name, 50% particle diameter of 0.32 micrometer) 150 mass part, and partially aromatic solvent (equivalent amount of methyl-ethyl-ketone and toluene are mixed) 750 mass part were mixed,

and it distributed or dissolved, and was considered as the constituent.

[0051](Valuation method) The result measured as follows was indicated to Table 1 thru/or 4 as evaluation of the cover tape of an example and a comparative example about surface resistance, an electric charge extinction ratio, total light transmittance, Hayes, peel strength, and zip up nature. Using Hy Leicester UP "Mitsubishi Chemical make and trade name", the surface resistance value was measured on the conditions 22 ** and whose relative humidity are 40%, O seal showed it by having considered within the limits of $10^5 - 10^{13}$ omega/** as success, and x seal showed it by making the outside of the range into a rejection. Electric charge extinction ratios are the conditions 23**5 ** and whose relative humidity are 12**3% using STATIC-DECAY-METER-406C "product made by Electro-Tech-Systems, and trade name", The time which 5000V to 99% of attenuation takes was measured based on MIL-B-81705C, 2 or less seconds was considered as success, and x seal showed by making into a rejection what was shown and exceeded by O seal. Total light transmittance and Hayes were measured by color computer SM-55C (the Suga Test Instruments Co., Ltd. make, trade name). O seal showed total light transmittance by having considered not less than 75% as success smaller than 100%, and x seal showed it by making less than 75% into a rejection. O seal showed Hayes by having considered 50% or less as success more greatly than 0%, and x seal showed it by making not less than 50% into a rejection.

[0052]Peel strength expresses the Homo sapiens sealing nature, and heat seals it on the conditions shown below, Under the atmosphere of the temperature of 23 **, and 40% of relative humidity, by 300-mm/in exfoliation speed with the value measured at the exfoliation angle of 180 degrees using PEEL-BACK-TESTER (the Vanguard Systems, Inc. make, trade name). O seal showed by having considered the inside of 10-130g/1mm width range as success, and x seal showed by making the outside of the range into a rejection. Heat-sealing conditions heat sealed the cover tape of each example on the sheet XEG47 of a carrier tape "peace chemicals company make and trade name", the temperature of 150 ** and pressure 20 N/cm², and the conditions for time 0.5 second. 25 shots (200 mm) after performing heat sealing of 50 shots (400 mm) were made into the sample at delivery 8 mm in length of a seal head using the 2.0mm width x2 row and the seal head with a length [this / each] of 16 mm. Zip up nature was larger than 0g/1mm width, and especially, it is O seal and it showed [it considered below 30g/1mm width as success, it was larger than 0g/1mm width, and O seal showed the case below 20g/1mm width, and] it by x seal by making the thing exceeding 30g/1mm width into a rejection.

[0053]As Examples 1-9 showed to Table 1 thru/or 4, all the evaluations were success. Although Examples 10 and 11 were not displayed in a table, all the evaluations were success. As the comparative examples 1-8 showed to Table 1 thru/or 4, one of evaluation criteria was rejections.

[0054]

[Effect of the Invention] Antistatic property is secured with the conductivity of a heat glue line, and the electronic parts under storage or mounting are not destroyed with static electricity. Since the electronic parts which are excellent for the thin heat glue line 17, and are stored can check transparency easily, electronic parts are not used accidentally. Heat-sealing nature is the pliability of the flexible material layer 15, is stabilized to the carrier tape 3 and can do a seal. For this reason, the heat glue line 17 can select the material which is excellent in the characteristics, such as low-temperature heat-sealing nature, free. It excels in zip up nature, when removing with a mounting machine, electronic parts cannot jump out easily, a stop of a mounting machine is prevented, and the efficiency of a mounting machine can be improved.

[Translation done.]